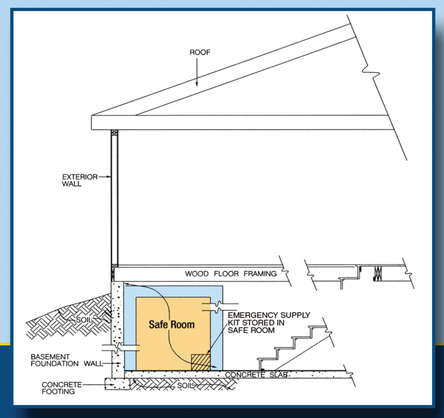
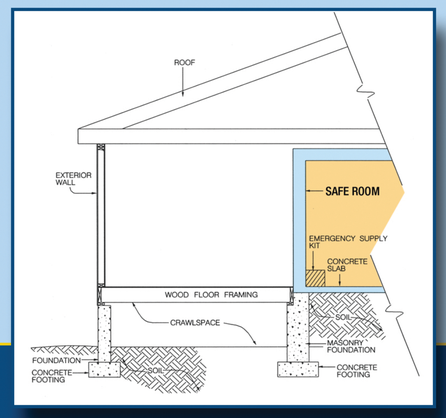
Building Your Safe Room

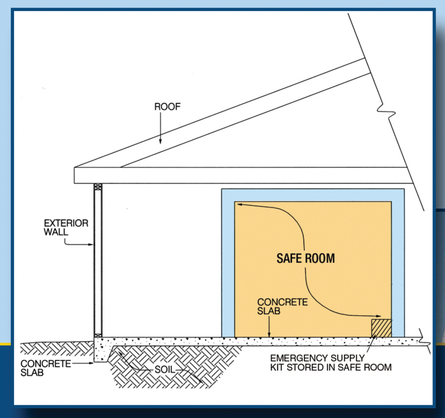
Tornado and Hurricane Protection



Typical basement foundation with safe room.



Typical crawlspace foundation with safe room.



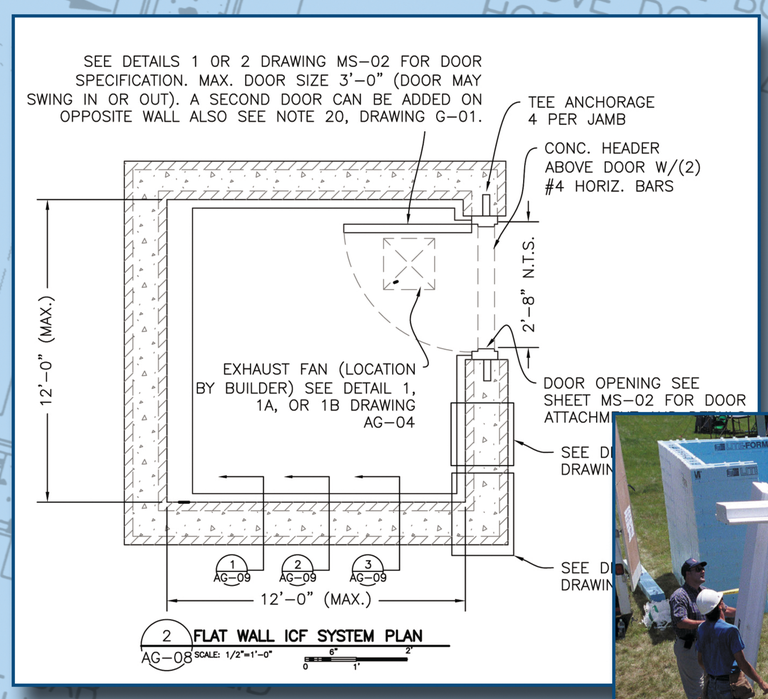
Typical slab-on-grade foundation with safe room.

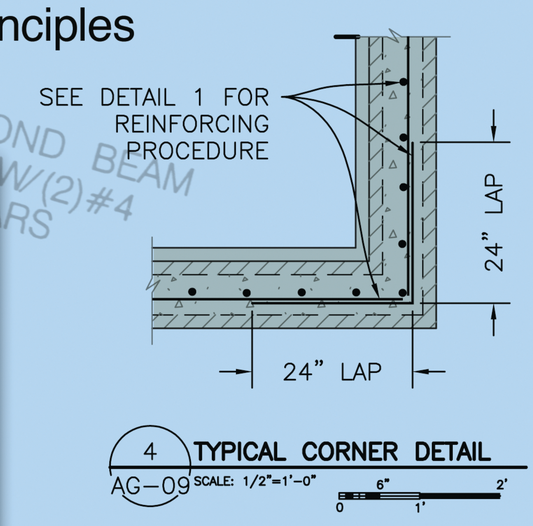
The foam panels of the Insulated Concrete Form (ICF) safe room are so light that they can be easily assembled by one or two people, as the worker below demonstrates.

Your builder/contractor can use the design drawings in **FEMA 320, *Taking Shelter From the Storm: Building a Safe Room For Your Home or Small Business***, to build a shelter in any of the wind zones. The design drawings provided include the details for building five types of shelters: concrete, concrete masonry, wood-frame, lean-to, and in-ground. Each of these alternatives is expected to perform equally well in resisting material fatigue and connection failures caused by extreme winds.

The materials and connections were chosen for their "ultimate strength," which means that the materials are expected to resist the loads imposed on them until they or the connections between them fail. The forces of extreme winds may cause cracks or other signs of stress in the materials or connections, and they may cause materials or connections to yield. However, the intent of the designs is not to produce a safe room that will always remain completely undamaged, but rather a safe room that will enable its occupants to survive an extreme windstorm with little or no injury. The safe room itself may need to be extensively repaired or completely replaced after an extreme wind event.

The safe room size and materials specified in the drawings are based on principles and practices used by structural engineering professionals and are gathered from the results of extensive testing for effects of missile impact. Before increasing the safe room size or using material types, sizes, or spacings other than those specified in the drawings, review the changes with a licensed professional structural engineer.





Designs using other materials can be found in FEMA 320

Workers assemble the roof panels, which will be covered with rebar and concrete.

FEMA